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MAGNETIC PROPERTIES OF IRON OXIDE NANO-PARTICLES FABRICATED BY THE INVERSE MICELLAR METHOD

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We have fabricated various types of iron oxide nanoparticles by the inverse micellar method^{1,2} and systematically studied their magnetic properties by Mössbauer spectroscopy. The inverse micellar method allows control of the oxidation state and fabrication of monodisperse nanoparticles. We present an analysis of the manufactured iron oxide particles. This investigation reveals details about particle shape, size distribution, and the variation of the Mössbauer hyperfine field as function of temperature; furthermore we are presenting results on the change of magnetic properties as function of the particle size. Particularly, for the smaller particle sizes the magnetic properties show nano-scale related effects, e.g. superparamagnetism.

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